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Transformative learning as pedagogy for the health professions: a scoping review

Van Schalkwyk, SC; Hafler, J; Brewer, TF; Maley, M; Margolis, C; McNamee, L; Meyer, I; Peluso, MJ; Schmutz, S; Spak, JM; Davies, D on behalf of the Bellagio Global Health Education Initiative

Corresponding author:

SC van Schalkwyk, M Phil, PhD
Centre for Health Professions Education
Faculty of Medicine and Health Sciences
Stellenbosch University, South Africa
Email: scvs@sun.ac.za
Tel: +27 (0)21 9389874
ORCID: 0000-0003-1596-6791

JP Hafler, RN, M.Ed, Ed.D
Professor of Pediatrics, Assoc Dean
Yale University, New Haven CT USA
Janet.hafler@yale.edu

TF Brewer, MD, MPH
Departments of Medicine and Epidemiology, David Geffen School of Medicine and Fielding School of Public Health
University of California, Los Angeles, United States
Email: tbrewer@conet.ucla.edu
ORCID: 0000-0002-5615-1639

MAL Maley, MSc, PhD, PGCertMedEd
Faculty of Health and Medical Sciences
The University of Western Australia
Crawley, Western Australia
Email: malmaley20@gmail.com
ORCID: org/0000-0001-5085-5013

CZ Margolis, M.D., M.A.
Faculty of Health Sciences
Ben Gurion University
Beer Sheva, ISRAEL
Email: mcarmi@bgu.ac.il

LS McNamee, MEd, PhD
Centre for Health Professions Education
Faculty of Medicine and Health Sciences
Stellenbosch University, South Africa
Email: mcnameel@sun.ac.za
Tel: +27 (0)21 9389495

I Meyer, BSc in Physiotherapy, M Phil in HPE
Centre for Health Professions Education
Faculty of Medicine and Health Sciences
Stellenbosch University, South Africa
Email: imeyer@sun.ac.za
Tel: +27 (0)21 9389944
ORCID: 0000-0002-5827-7788

MJ Peluso, MD MPhil MHS
Division of Infectious Diseases
University of California-San Francisco Medical Center
San Francisco, California, U.S.
Email: michael.peluso@ucsf.edu
Tel: +1 415 476 9363
ORCID: [0000-0003-0585-6230](https://orcid.org/0000-0003-0585-6230)

AMS Schmutz, BSc Physiotherapy, M Phil in HPE
Centre for Health Professions Education
Faculty of Medicine and Health Sciences
Stellenbosch University, South Africa
Email: amsschmutz@sun.ac.za
Tel: +27 (0)21 9389084

ORCID: 0000-0002-9845-825X

JM Spak, MLS

Cushing/Whitney Medical Library

Yale School of Medicine

New Haven, CT 06520

Email: judy.spak@yale.edu

Tel: +1 203 737 2961

ORCID: 0000-0003-0705-168x

DA Davies. PhD

Associate Professor (Reader)

Warwick Medical School

University of Warwick, Coventry, UK

Email: David.Davies@warwick.ac.uk

ORCID: 0000-0002-7573-2762

Abstract

Introduction

Transformative learning (TL) has been described as learning that challenges established perspectives, leading to new ways of being in the world. As a learning theory it has resonated with educators globally, including in the health professions. Described as a complex, meta-theory, TL has evolved over time, eliciting divergent interpretations of the construct. This scoping review provides a comprehensive synthesis of how TL is currently represented in the health professions education literature, including how it influences curricular activities, to inform its future application in the field.

Methods

Arksey and O'Malley's six step framework was adopted to review the period from 2006 to May 2018. Ten bibliographic databases were searched generating 1532 potential studies. After several rounds of review, first of abstracts and then of full texts, 99 studies were mapped by two independent reviewers onto the internally developed data extraction sheet. Descriptive information about included studies was aggregated. Discursive data was subjected to content analysis.

Results

A mix of conceptual and empirical research papers, which used a range of qualitative methodologies, were included. Studies from the USA, UK and Australia were most prevalent. Insights relating to how opportunities for TL were created, how it manifests and influences behavior, as well as how it is experienced, demonstrated much congruency. Conceptions of TL were seen to be clustered around the work of key theorists.

Conclusions

The training of health professionals often takes place in unfamiliar settings where students are encouraged to be active participants in providing care. This increases the opportunity for exposure to learning experiences that are potentially transformative, allowing for a pedagogy of uncertainty that acknowledges the complexity of the world we live in and questions what we believe we know about it. TL provides educators in the health professions with a theoretical lens through which they can view such student learning.

Introduction

Transformative learning (TL) has become an established theory across numerous disciplines in higher education, including the medical and health professions (1). In his critical review, Taylor (1) highlighted the role of reflection in TL and described ways in which it might be fostered in health professions education (HPE) amongst others. The publication of the seminal Lancet Commission article on HPE for the 21st Century (2) further entrenched TL as an important pedagogical construct for HPE. Frenk and colleagues (2) described TL as focusing on the development of leadership attributes that ‘produce enlightened change agents’. They further qualified their definition, highlighting ‘three fundamental shifts: from fact memorisation to searching, analysis, and synthesis of information for decision making; from seeking professional credentials to achieving core competencies for effective teamwork in health systems; and from non-critical adoption of educational models to creative adaptation of global resources to address local priorities’. This understanding clearly positions TL as a desirable outcome for HPE.

TL as a theoretical construct was introduced through the formative work of Mezirow in 1991. (3) Influenced by established educational theorists - Kuhn’s conception of paradigms, Freire’s work around conscientisation, and Habermas’s domains of learning (4) - Mezirow’s early position on TL was ‘learning [that] is understood as the process of using a prior interpretation to construe a new or revised interpretation of the meaning of one’s experience in order to guide future action’. (5) This understanding evolved to describing TL as ‘learning that transforms problematic frames of reference—sets of fixed assumptions and expectations (habits of mind, meaning, perspectives, mindsets)—to make them more inclusive, discriminating, open, reflective, and emotionally able to change’. (6) Others have described TL as involving a ‘deep structural shift ... that dramatically and permanently alters our ways of being in the world’. (7)

Creating opportunities that might enable TL requires intentional curriculum change. As part of our curriculum development work within the Bellagio Global Health Education Initiative (BGHEI), we aimed to create such opportunities. Immediately evident from our deliberations, however, was the extent to which our understanding of the construct differed amongst us and lacked a clear theoretically grounded comprehension. We therefore embarked on a scoping review of the following research questions: How is TL understood in the HPE literature? How does current empirical work describe TL? Apart from the BGHEI members, our review team

was augmented by the inclusion of three researchers with an HPE background and a librarian. Our intention was to provide the HPE community with a comprehensive synthesis of TL, including how it is taken up in curricular activities, with a view to informing its future application in the field.

Methodology

This scoping review aims “to map the key concepts contained in a research domain ... to produce a quick, narrative, descriptive account of the scope of current literature”. (8) We used Arksey and O’Malley’s (9) six step framework. The research question was developed through a consultative process including all group members (Step 1), whereafter potentially relevant studies were identified by conducting an extensive search of the literature based on a set of inclusion and exclusion criteria (Step 2). We began with the Yale MeSH Analyzer (10) using key known articles to identify relevant controlled vocabulary (MeSH terms, Emtree and others) and keyword terms to be used. Each concept was then translated for use in databases. Major concepts searched included a combination of controlled vocabulary and keywords with variations such as undergraduate medical education, nursing education, health profession education, learning, transformative (including transforming, transform, etc.) (Appendix 1). Undergraduate medical education was defined as programmes at pre-licencing level, while postgraduate referred to post-licensing programmes, including graduate medical education.

On 27 February 2017 and 31 May 2018, an experienced medical librarian searched ten bibliographic databases including: Ovid MEDLINE, Ovid Embase, Ovid PsycINFO, Scopus, and ERIC (Appendix 2). Search results were downloaded to *EndNote x.7* and duplicates removed. The 1080 retrieved abstracts were independently reviewed by two team members using *Covidence* software; conflicts were resolved by a third. Abstracts were excluded if they were not within scope, specifically if they were not about transformative learning and undergraduate HPE, if they were conference abstracts, letters to the editor or abstracts from dissertations. At this point, the period under review was limited to January 2006 – May 2018 resulting in 266 full texts being considered (Step 3).

[insert: Figure 1: PRISMA Flow Diagram]

A data extraction sheet was developed consultatively, guided by the research question (Step 4). Each study was again reviewed independently by two reviewers and conflicts resolved by

a third. Apart from descriptive data about the articles, data relating to how TL was defined; which theorists were featured; how TL was applied in the study; whether a learning intervention was described; and whether and how TL was assessed; were also captured (Appendix 3). These data were subjected to content analysis (11) using a 'structuration' approach as analytical frame as we searched for patterns, similarities and contradictions across the data. (12) Structuration theory acknowledges the structural and agentic dimensions present in all contexts. These dimensions informed the categorisation our data as we sought to understand the way in which TL is structured as well as how it is experienced. The results of this analysis are presented in the section below (Step 5).

Results

Description of the included studies

Forty-two (42%) of the 99 studies were conceptual in nature, while 57 (58%) papers referred to empirical work. Fifty studies used qualitative methodologies with the balance claiming a mixed methods approach. Only one included study used a purely quantitative approach.

The data collection methods varied between in-depth, semi-structured focus groups and individual interviews (18%), written reflection essays (9%), journals and narratives (6%), and surveys and questionnaires (5%). Other approaches to generate data included audio-diaries, participant observations, critical incidence reports, and debrief sessions. A modified version of the Reflection Questionnaire was used in the quantitative study. (13)

Nursing was the health profession that featured most in the included studies (52%), while programmes in medical education were described in 24 (24%) articles. In four articles, multiple health professions were included in a single study. Other health professions included dentistry, pharmacy, sociology, occupational and physical therapy. In the case of one article, the profession was not identified. Sixty-eight (67%) articles referenced undergraduate programs; 31 (31%) articles included both undergraduate and postgraduate trainees. Among the empirical studies (37%) participants ranged from first year to final year undergraduate students. One article also included postgraduate students. In 17 (17%) of the articles, the study year of participants was not identified. The interventions took place in various countries including Australia (n=19), Canada (n=8), Ecuador (n=2), Ghana (n=1), Japan (n=1), Mexico (n=2), South Africa (n=6), Sweden (n=4), Zambia (n=1), UK (n=12), USA (n=31) and Taiwan (n=1), and in both rural and urban settings. Forty-four (44%) articles were identified as having been applied in a global health context.

Transformative learning in review

In this section we offer a synthesis of how the tenets of TL theory manifest in the included studies, both conceptually and practically. Sixty-nine studies (70%) referenced the work of Mezirow, in many instances in tandem with other theorists such as Brookfield, Boyd, Cranton, Meyer and Land, and Freire. Based upon our analysis of the various ways in which TL is defined in the HPE literature reviewed, constituent elements were organised around 'input' spaces (or the conditions that foster TL), descriptions of the learning process itself, and 'output' spaces or the desired, observed or theorised outcomes of TL.

How transformative learning occurs

As a theory of learning, TL is characterized by change – change in one's beliefs about oneself (14), about others, about practices, *etcetera*. Conceptualisations draw on constructivist principles in that learning occurs through critically engaging with what one believes and knows in light of what one experiences (15, 16), going beyond and building on prior learning. (17-19) It may also mean learning from one's mistakes. (20) A dominant theme across a large number of the included studies emphasized that for TL to occur there has to be an opportunity for questioning existing frames of reference, and for reassessing one's beliefs, habits of mind and prejudices before entering a less-known environment where the knowledge and values upon which these beliefs and prejudices are founded might be questioned. (16, 18, 21-37) Enablers for TL are therefore becoming aware of one's prior assumptions and having one's worldview challenged. (38-53) In addition, 'liberating learning environments', or 'those conducive to developing autonomous thinking and self-empowerment' (54, 55) were described as necessary for reinterpreting experiences. TL requires an intentional, conscious act that occurs within both the cognitive (17, 27, 40, 56) and affective domains (23, 27, 54, 57), and involves critical thinking. (17, 31, 58)

Many of the studies suggested that TL is often best facilitated through immersion in a different context – specifically outside of the classroom. (59) It speaks to a 'pedagogy of place' that acknowledges the role of locale and context in learning. (29, 60) Common pedagogies and approaches to teaching and learning were those that required active

engagement with communities that appeared to be different to what the students knew. (61, 62) These engagements in less familiar communities included working in rural or underserved communities (53, 59-61, 63-68), travelling abroad (36, 69), service learning at mental health institutions (45, 70), visiting homes for marginalised and otherwise disadvantaged persons (52, 71, 72), or caring for patients at the end of their lives. (73)

There was a clear focus on clinical activities (29%) and interactive teaching through workshops (13%). Online courses (30, 74-76), digital storytelling (21, 77) and film (78), as well as simulation (20, 25, 32, 48, 50, 51) were used. Interventions included collaborative or peer-led learning, group or teamwork (37, 57, 79-81) and mentorship (82), with opportunities for dialogue and the use of narrative (17, 39, 62). Similarly, what was described as ‘experiential’ learning (25, 57, 68) and learning that provided for authentic experiences (19, 33, 41, 59, 83) in natural settings were seen to be challenging often from a resource or socio-economic perspective (35, 52).

Sixty-four of the 99 articles made reference to reflection as a process to both facilitate and assess TL with one article offering a ‘Model of Holistic Reflection’. (84) Specific ways in which reflection was encouraged included interviewing (69, 83) and debriefing (32, 85); discussions (41, 86); focussing on core values (29); reflective writing, including using journals. (13, 27, 30, 45, 52, 87) Reflection was described as ‘open-ended’ (40), ‘self-reflection’ (28); and ‘critical’ (38, 55, 63, 88-90), with one study suggesting that such ‘critical reflection’ could minimize the gap between theory and practice. (90)

There is also a strong social imperative to TL. It presupposes engagement with others, including communities, who may well have different ways of thinking and doing to what the student has been accustomed. (23, 36, 42, 88, 91) Several authors refer to the social dimensions of TL. TL is not just the process of introspection through critical reflection that leads to new ways of thinking, or illumination (92), but it also emphasizes high level communication skills including ‘empathic listening’ (37), rational discourse (30), reflective discourse (26) and an awareness of the assumptions of others. (93)

Several studies described (41) specific events or conditions that acted as ‘triggers’ for TL. Mezirow’s notion of a ‘disorienting dilemma’, the first of his ten phases of transformative learning, featured strongly. (23, 36, 40, 51, 94) Often this was linked to a particular event or experience, typically the ‘authentic’ experiences mentioned above, and could be associated with feelings of guilt and fear. (40, 59) In some instances, TL was directly linked to Meyer

and Land's idea of 'threshold concepts' (41, 43, 47, 77, 95) – 'a transformed way of understanding, or interpreting, or viewing something'. (96)

Outcomes of TL

TL, as described in the studies, was seen to influence the professional identity formation of students. (45, 47, 62) As they developed more discriminating perspectives, their worldviews shifted. (47, 53, 58, 66, 97-99) Accordingly, TL influenced their values, attitudes and behaviours (30, 37, 57, 61, 72, 100), and how they saw and understood themselves. (14, 33, 69, 80) Students developed new interpretations of how things were, including conditions within the realm of health care. (22, 94) There was a heightened awareness of others (17, 28, 64), regardless of culture and socio-economic standing (69), and of differing opinions and perspectives (23) as they progressed towards 'multiplicity' considering multiple viewpoints. (17) Studies spoke of how this awareness enhanced humanistic values, such as humility and integrity (24, 55, 57), and patient-centredness, characterized by empathy and caring. (17, 22, 45) Students were also described as having authentic opportunities to build and negotiate social, professional, therapeutic and reciprocal relationships. (24, 33, 64, 78, 94, 101, 102)

While TL is characterized as having a strong cognitive dimension, its impact should manifest in behavioural change. Students were described as becoming agents for change (44, 64, 67), an important feature of Mezirow's theory which argued for change that spoke to issues of both social accountability and social justice. The transformed view of the world allows individuals to examine social injustice (58, 74, 103), that in a health context leads to health inequalities. (31)

Students increased reflectiveness encourages a process of self-actualisation which is seen to build self-confidence and resulting competence (70) and empowerment. (54, 85) Students claimed to be more confident in caring for patients from different cultures (66, 85, 94) as a result of a sense of cultural competency. (87) Some studies suggested that as a result of the immersion that was mentioned above, students developed a sense of belonging or connectedness with patients, other healthcare professionals and members of the community. (19, 83)

While there was much coherence across the included studies as to the value for students, and indeed ultimately for patient care, health care delivery, and even society, there were also some less common indicators that warrant discussion. For example, while personal and social

dimensions featured strongly in the described outcomes, one study suggested that students still acquired ‘academic knowledge’ but did so ‘in a different way’ from what they felt they had experienced previously. (68)

Experience of TL

While most studies framed TL as potentially having a significant positive effect on an individual’s career, it was evident that students could also have some unsettling experiences. Apart from the guilt and fear mentioned above, studies also described how students experienced learning events posited as being ‘transformative’, ‘intense’ (72), ‘uncomfortable’ (94), and characterized by ‘uncertainty’. (47) Experiences also were described as ‘intellectual’ (71) and ‘emotional’ (63, 71, 102), but also ‘different’ (34, 60) or as a ‘journey’. (63)

Students need to be receptive and have the capacity (49) to consider multiple viewpoints while their own positions and frames of reference are being challenged. They need to be open to experience a level of vulnerability and take the ‘disorienting dilemmas’ on board rather than opting to distance themselves from either the patients or the context. (95) There needs to be an intent to seek common ground for understanding (37) that will lead to the social good that is implicit in TL theory. Inevitably there are students who may be too egocentric and/or emotionally disconnected to benefit. (63) A vacation mindset was an acknowledged danger in ‘study abroad’ studies. (63) Finally it should be noted that only one included study indicated that the work conducted had provided no evidence of TL and described the experience of students struggling with the uncertainty and challenges that they are presented with – specifically with regards to ethical issues. (104) These authors and others (105) call for curriculum renewal to prepare students in advance for such learning initiatives.

Discussion

To the best of our knowledge, this review represents the first of its kind in HPE literature. The review showed that there is broad consensus as to what TL in HPE is perceived to be, how TL is fostered, and how students experience it. TL is described as learning that changes the way we see the world through an experience or event that encourages reflection, typically challenging preconceived understandings, that enables positive future action and meaningful relationships (1). It appears to be more common when learning takes place outside of the conventional classroom, when students are exposed to less familiar contexts, and when modes of delivery and engagement other than formal lectures are adopted. For TL to occur, students

must have the capacity to respond to and engage in these unfamiliar contexts. A lack of such capacity can preclude TL.

Criticism has been lodged against the way in which TL theory has been assimilated into learning theory discourse. (106, 107) For example, Newman argues that change appears to be key to TL and questions whether *all* learning is not about change in some way and whether it is even possible to identify TL as a distinct phenomenon. (107) Perhaps it is indeed so that TL theory essentially provides a frame within which we are better able to understand learning, although in this instance it is learning to a particular end. We would therefore argue that TL is indeed identifiable and distinct. A recent review emphasises these distinct features, describing a typology of TL outcomes comprising ‘worldview’ – the assumptions, beliefs, attitudes that influence how we make sense of an experience and the development of a more complex perspective, consisting of five aspects: ‘self’ – taking responsibility, knowing oneself, also in relation to others, and one’s identity; ‘epistemology’ – becoming more discriminating about what knowledge is, acknowledging multiple ways of knowing; ‘ontology’ – ways of being in the world; ‘behaviour’ – action influenced by changed perspectives and even new skills; ‘capacity’ – cognitive and affective ability. (108) Each of these domains is present in our review to a greater or lesser extent although they are not all present in each of the studies. This prompts the question – when does a learning experience qualify as transformative? While in general the included studies that describe an intervention all speak to a type of learning that goes beyond informative and formative approaches, the application of such a typology as inclusion criteria would have resulted in excluding many of these publications. Their standing in terms of facilitating TL could therefore be critiqued.

Hoggan argues that depth and breadth of experience and evidence that change is not temporary are important criteria for TL. (108) These criteria also resonate with Mezirow’s ten phases of TL that move from being confronted with a disorienting dilemma, to critical reflection of self and of one’s assumptions, to consideration of new roles and a different course of action, to the adoption of these new roles, and finally, reintegration into one’s life based on one’s new way of being. Mezirow’s work was dominant in the included studies, and many of these phases are featured, particularly in those studies that describe empirical work.

Generally, however, the frequency of representation diminishes the further one moves through the phases, with most studies acknowledging students being challenged to reflect on their assumptions, and suggesting that this leads to new perspectives, but with fewer emphasising changed action. This again raises the question about when a claim for TL can be

made, and whether movement through all phases is required. While TL theory claims that the new ways of being are both integrated and irreversible, there is a dearth of longitudinal studies, one exception being a study by Greenhill et al. (109), that could offer perspectives on the extent to which change is sustained. In addition, one might argue that it is not possible to attribute sustained change to a particular event.

What are the implications of this study for HPE? First, context is critical. As the training of health professionals continues to move towards settings where they are active participants in care (110), often in unfamiliar surroundings (whether learning for the first time in a hospital, or on an elective in a foreign country) increased opportunities for exposure to learning experiences that are potentially transformative will become available. Moving outside of the conventional classroom offers both students and educators freedom to explore issues beyond the formal curriculum, such as social justice, that are implicit in the work of the original theorists in the field. Second, that despite the influence of context, TL is about the individual – his or her journey. This journey is characterised by both a cognitive and an affective dimension, an epistemological and ontological position, and that these are intertwined, potentially providing for the depth and breadth of learning alluded to above. Third, in the context of HPE, the social, relational and emotional components have specific relevance to becoming a professional in any of the caring professions. As mentioned earlier, Mezirow's sense was that TL would ultimately lead to social change and promote social justice. In the context of current global health inequity this imperative strikes a chord more strongly than any other when considering the learning that we would wish future health professionals be exposed to.

Finally, the findings of this study also carry implications for teachers, including clinical educators, for curriculum developers and for programme administrators responsible for creating learning opportunities and establishing the enabling learning environments such as those described above. To fulfil these tasks would require a preparedness on the part of these educators to themselves critically engage with what they believe and what this might mean for their own practice. Curriculum renewal activities can be designed to include teaching strategies that engage students in critical self-reflection. Equally important, however, is for educators in the health professions to be sensitive to students' potential responses, whether positive or negative, both cognitively and emotionally. Providing detailed and practical guidelines for educators in the health professions about facilitating TL would be an important next step to emerge from this review.

While this review has sought to address a gap in our current understanding of TL and how it is represented in the existing HPE literature, there are limitations to this work. In seeking to scope the literature we adopted an approach that pushed for breadth rather than depth. In the process of synthesis, unique details may have been lost. Following the conventions of scoping reviews, we did not formally review the quality of the evidence in the included studies. (9) A systematic review might address this gap. Furthermore, since the nursing profession was the most represented programme in the included studies, the relevance of this review for all health professions' undergraduate programmes may be questioned. Nevertheless, we believe that the work provides insights that can inform future studies that seek to foster and/or assess TL. Another aspect that warrants further attention is the role of self-reflection in facilitating and assessing TL. Finally, the review team comprised a diverse group of professionals that includes clinicians, administrators and educationalists who approached the process of review and analysis from quite different perspectives. Reaching consensus required vigorous debate, but we believe this enhanced the final product.

Conclusion

TL theory has become 'an internationally well-known and recognized contribution to the understanding of what may be perceived as the most advanced kind of human learning' (111). It has been described as 'complex and multi-faceted' (4), 'the iconic education philosophy' (1) in higher education, and an 'analytic metatheory' (108) providing educators with a theoretical lens through which to view students' learning. Notwithstanding critiques levelled at TL, there can be no doubt that it warrants our attention and further work that will explore the issues raised in this review is required.

One of the main goals of the BGHEI relates to offering curriculum recommendations for global health education. (112) Much can be learnt from this review for those who are involved in, or intend to embark on a global health educational intervention, particularly in terms of preparing students, ensuring time and space for critical reflection and discourse, structuring learning events or experiences to allow for discomfort and a move away from 'safe' spaces. However, we would argue that the review offers a broader perspective and that addressing the challenges facing health professions education in the 21st Century requires a pedagogy of uncertainty that allows for 'human flourishing', acknowledging the complexity of the world we live in and questioning what we believe we know about it. (113) TL theory offers such a pedagogy.

Author contributions

ScvS: Made substantial contributions to the conceptualization and design of the study. Was directly involved in the review at all levels and the analysis and interpretation of the data. Prepared the first draft of the manuscript and managed subsequent revisions and finalization thereof.

JH: participated in the conceptualization of the study, in data abstraction, analysis and interpretation and was involved in critically revising the manuscript for important intellectual content.

TFB: Participated in the conceptualization of the study, in data abstraction, analysis and interpretation and was involved in critically revising the manuscript for important intellectual content.

MALM: Participated in multiple levels of abstract review, contributed to some segments of analysis and interpretation, as well as final review

LSM: Participated in all levels of review, data extraction and analysis, and contributed to writing and review of segments of the manuscript.

IM: Participated in the review process at abstract and full text level, contributed to data analysis and final review of the manuscript.

MJP: Participated in the review at all levels, the abstraction and analysis of data, and was involved in critically revising the manuscript.

SS: Participated in the review process at abstract and full text level, contributed to data analysis and final review of the manuscript.

JMS participated in the refinement of the research question, conceptualized and conducted the literature searches, the acquisition of the literature as data for analysis, and was involved in critically revising the manuscript for important intellectual content.

DAD: Made substantial contributions to the conceptualization and design of the study. Was directly involved in the review at all levels including the analysis and interpretation of the data and was involved in critically revising the manuscript for important intellectual content

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Conflict of interest

The authors declare that they have no conflict of interest

References

1. Taylor EW. An update of transformative learning theory: A critical review of the empirical research (1999–2005). *International journal of lifelong education*. 2007;26(2):173-91.
2. Frenk J, Chen L, Bhutta ZA, Cohen J, Crisp N, Evans T, et al. Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. *The Lancet*. 2010;376(9756):1923-58. doi: 10.1016/s0140-6736(10)61854-5.
3. Mezirow J. Transformative dimensions of adult learning: ERIC; 1991.
4. Kitchenham A. The evolution of John Mezirow's transformative learning theory. *Journal of transformative education*. 2008;6(2):104-23.
5. Mezirow J. Contemporary paradigms of learning. *Adult education quarterly*. 1996;46(3):158-72.
6. Mezirow J. Transformative Learning as Discourse. *Journal of Transformative Education*. 2003;1(1):58-63. doi: 10.1177/1541344603252172.
7. O'Sullivan E, Morrell A, O'Connor MA. Expanding the boundaries of transformative learning: Essays on theory and praxis: Springer; 2002.
8. McGaghie WC. Varieties of integrative scholarship: why rules of evidence, criteria, and standards matter. *Academic Medicine*. 2015;90(3):294-302.
9. Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *International journal of social research methodology*. 2005;8(1):19-32.
10. Grossetta Nardini HK, Wang L. The Yale MeSH Analyzer [Internet]. New Haven, CT: Cushing/Whitney Medical Library; 2018 [cited *Date Accessed*]. Available from: <http://mesh.med.yale.edu/>.
11. Vaismoradi M, Turunen H, Bondas T. Content analysis and thematic analysis: Implications for conducting a qualitative descriptive study. *Nursing & health sciences*. 2013;15(3):398-405.

12. Hardcastle MAR, Usher KJ, Holmes CA. An overview of structuration theory and its usefulness for nursing research. *Nursing Philosophy*. 2005;6(4):223-34.
13. Walters C, Charles J, Bingham S. Impact of short-term study abroad experiences on transformative learning: A comparison of programs at 6 weeks. *Journal of Transformative Education*. 2017;15(2):103-21.
14. Thompson TD, Thompson EA. "In at the deep end": an intensive foundation training in homeopathy for medical students. *Homeopathy*. 2009;98(2):107-13.
15. Zodpey S, Sharma A. Advancing reforms agenda for health professionals' education through transformative learning. *Indian journal of public health*. 2014;58(4):219.
16. Grapczynski CA, Schuurman S, Booth AD, Bambini D, Beel-Bates C. The Integrated Model for Interprofessional Education: A Design for Preparing Health Professions' Students to Work in Interprofessional Teams. *Journal of allied health*. 2015;44(2):108-14.
17. Cohen AL, Pitman Brown P, Morales JP. Student Journals: A Means of Assessing Transformative Learning in Aging Related Courses. *Gerontology & geriatrics education*. 2015;36(2):185-203.
18. Garneau AB. Critical reflection in cultural competence development: A framework for undergraduate nursing education. *Journal of Nursing Education*. 2016;55(3):125-32.
19. Manninen K, Welin Henriksson E, Scheja M, Silén C. Authenticity in learning—nursing students' experiences at a clinical education ward. *Health Education*. 2013;113(2):132-43.
20. Young J, Williamson M, Egan T. Students' reflections on the relationships between safe learning environments, learning challenge and positive experiences of learning in a simulated GP clinic. *Advances in Health Sciences Education*. 2016;21(1):63-77.
21. Christiansen A. Storytelling and professional learning: A phenomenographic study of students' experience of patient digital stories in nurse education. *Nurse education today*. 2011;31(3):289-93.
22. Elliott CM, Toomey III RJ, Goodman BA, Barbosa P. Transformative learning: Empathy and multicultural awareness in podiatric medical education. *Journal of the American Podiatric Medical Association*. 2012;102(1):39-46.
23. Fletcher KA, Meyer M. Coaching model+ clinical playbook= transformative learning. *Journal of Professional Nursing*. 2016;32(2):121-9.
24. Greenhill J, Poncelet AN. Transformative learning through longitudinal integrated clerkships. *Medical education*. 2013;47(4):336-9.
25. Kear TM. Transformative learning during nursing education: A model of interconnectivity. *Nurse education today*. 2013;33(9):1083-7.
26. Kirkpatrick H, Tweedell D, Semogas D. Transformative learning through a research practicum for undergraduate nursing students. *Journal of Nursing Education*. 2011;50(10):595-8.
27. Kumagai AK. A conceptual framework for the use of illness narratives in medical education. *Academic medicine : journal of the Association of American Medical Colleges*. 2008;83(7):653-8. Epub 2008/06/27. doi: 10.1097/ACM.0b013e3181782e17. PubMed PMID: 18580082.
28. Kumagai AK, Murphy EA, Ross PT. Diabetes stories: use of patient narratives of diabetes to teach patient-centered care. *Adv Health Sci Educ Theory Pract*. 2009;14(3):315-26. Epub 2008/06/03. doi: 10.1007/s10459-008-9123-5. PubMed PMID: 18516695.
29. Masin H, Tischenko AK. Professionalism, attitudes, beliefs and transformation of the learning experience: Cross-cultural implications for developing a Spanish elective for non-Spanish-speaking physical therapist students. *Journal of Physical Therapy Education*. 2007;21(3):40-6.
30. Mastel-Smith B, Nash T, Caruso K. Addressing future demands: Development of an online gerontological nursing course. *Geriatric Nursing*. 2016;37(5):404-7.
31. McAllister M. STAR: a transformative learning framework for nurse educators. *Journal of Transformative Education*. 2011;9(1):42-58.

32. Parker B, Myrick F. Transformative learning as a context for human patient simulation. *Journal of Nursing Education*. 2010;49(6):326-32.
33. Rhodes CA. Service user involvement in pre-registration children's nursing education: the impact and influence on practice: a case study on the student perspective. *Issues in comprehensive pediatric nursing*. 2013;36(4):291-308.
34. Rush B. Mental health service user involvement in nurse education: a catalyst for transformative learning. *Journal of Mental Health*. 2008;17(5):531-42.
35. Stacey G, Stickley T. Recovery as a threshold concept in mental health nurse education. *Nurse Education Today*. 2012;32(5):534-9.
36. Thompson T, Lamont- Robinson C, Williams V. At sea with disability! Transformative learning in medical undergraduates voyaging with disabled sailors. *Medical education*. 2016;50(8):866-79.
37. Weaver K, Pye KM. "It's not about Food!": Peer Facilitation for Eating Issues. *International Journal of Interdisciplinary Social Sciences*. 2010;5(3).
38. Horton-Deutsch S, McNelis AM, Day POH. Developing a reflection-centered curriculum for graduate psychiatric nursing education. *Archives of psychiatric nursing*. 2012;26(5):341-9.
39. Kear TM. The use of narrative analysis to study transformative learning in associate degree nursing students: A focus on the methodology. *Teaching and Learning in Nursing*. 2012;7(1):32-5.
40. Kearsley JH, Lobb EA. 'Workshops in healing' for senior medical students: a 5-year overview and appraisal. *Medical humanities*. 2014;40(2):73-9.
41. Manninen K. Experiencing authenticity—the core of student learning in clinical practice. *Perspectives on medical education*. 2016;5(5):308-11.
42. McAllister M, Tower M, Walker R. Gentle interruptions: transformative approaches to clinical teaching. *Journal of Nursing Education*. 2007;46(7):304.
43. McAllister M, Lasater K, Stone TE, Levett-Jones T. The reading room: exploring the use of literature as a strategy for integrating threshold concepts into nursing curricula. *Nurse education in practice*. 2015;15(6):549-55.
44. McAllister M. Exploring transformative learning and the courage to teach a values based curriculum. *Nurse education in practice*. 2015;15(6):480-4.
45. Mercer D, Kenworthy H, Pierce-Hayes I. Making rhetoric a reality: inclusion in practice as "transformative learning". *Mental Health and Social Inclusion*. 2016;20(2):110-8.
46. Murdoch-Eaton D, Sandars J. Reflection: moving from a mandatory ritual to meaningful professional development. *Archives of disease in childhood*. 2014;99(3):279-83.
47. Neve H, Lloyd H, Collett T. Understanding Students' Experiences of Professionalism Learning: A "Threshold" Approach. *Teaching in Higher Education*. 2017;22(1):92-108. PubMed PMID: 1871586236; EJ1119434.
48. O'Callaghan A. Emotional congruence in learning and health encounters in medicine: addressing an aspect of the hidden curriculum. *Advances in Health Sciences Education*. 2013;18(2):305-17.
49. Santalucia S, Johnson CR. Transformative learning: Facilitating growth and change through fieldwork. *OT Practice*. 2010;15(19):CE1-CE7.
50. Schoo A, Lawn S, Rudnik E, Litt J. Teaching health science students foundation motivational interviewing skills: use of motivational interviewing treatment integrity and self-reflection to approach transformative learning. *BMC medical education*. 2015;15(1):228.
51. Smith KV, Witt J, Klaassen J, Zimmerman C, Cheng A-L. High-fidelity simulation and legal/ethical concepts: A transformational learning experience. *Nursing Ethics*. 2012;19(3):390-8.
52. van den Heuvel M, Au H, Levin L, Bernstein S, Ford-Jones E, Martimianakis MA. Evaluation of a social pediatrics elective: Transforming students' perspective through reflection. *Clinical pediatrics*. 2014;53(6):549-55.

53. Bergh A-M, Bac M, Hugo J, Sandars J. "Making a difference" – Medical students' opportunities for transformational change in health care and learning through quality improvement projects. *BMC Medical Education*. 2016;16(1):171. doi: 10.1186/s12909-016-0694-1.
54. Hanson J. Advancing affective attributes and empowering undergraduate students—Lessons learned from the Bali bombing. *Nurse education in practice*. 2011;11(6):411-5.
55. Hanson J. From me to we: Transforming values and building professional community through narratives. *Nurse education in practice*. 2013;13(2):142-6.
56. Eichbaum Q. Acquired and Participatory Competencies in Health Professions Education: Definition and Assessment in Global Health. *Acad Med*. 2017;92(4):468-74. doi: <https://dx.doi.org/10.1097/ACM.0000000000001382>. PubMed PMID: 27603041.
57. Branch WT. The road to professionalism: reflective practice and reflective learning. *Patient Education and Counseling*. 2010;80(3):327-32.
58. McAllister M, Williams LM, Hope J, Hallett C, Framp A, Doyle B, et al. In my day II: Reflecting on the transformative potential of incorporating celebrations into the nursing curriculum. *Nurse education in practice*. 2011;11(4):245-9.
59. Prout S, Lin I, Nattabi B, Green C. 'I could never have learned this in a lecture': transformative learning in rural health education. *Advances in Health Sciences Education*. 2014;19(2):147-59.
60. Van Schalkwyk S, Bezuidenhout J, Conradie H, Fish T, Kok N, Van Heerden B, et al. 'Going rural': driving change through a rural medical education innovation. *Rural and Remote Health*. 2014;14(2493).
61. Van Schalkwyk SC, Bezuidenhout J, De Villiers MR. Understanding rural clinical learning spaces: Being and becoming a doctor. *Medical teacher*. 2015;37(6):589-94.
62. Ware SD, Winters-Moorhead C. Two worlds apart: experiential learning in Ghana. *Journal of National Black Nurses' Association: JNBNA*. 2009;20(1):66-71.
63. Foronda CL, Belknap RA. Short of transformation: American ADN students' thoughts, feelings, and experiences of studying abroad in a low-income country. *International journal of nursing education scholarship*. 2012;9(1).
64. Foronda C, Belknap RA. Transformative learning through study abroad in low-income countries. *Nurse educator*. 2012;37(4):157-61.
65. Laver S, Croxon L. Narrative pedagogy with evolving case study—A transformative approach to gerontic nursing practice for undergraduate nursing students. *Nurse education in practice*. 2015;15(5):341-4.
66. Riner ME. Globally engaged nursing education with local immigrant populations. *Public Health Nursing*. 2013;30(3):246-53.
67. van Schalkwyk S, Bezuidenhout J, Burch V, Clarke M, Conradie H, van Heerden B, et al. Developing an educational research framework for evaluating rural training of health professionals: A case for innovation. *Medical teacher*. 2012;34(12):1064-9.
68. Von Pressentin KB, Waggie F, Conradie H. Towards tailored teaching: using participatory action research to enhance the learning experience of Longitudinal Integrated Clerkship students in a South African rural district hospital. *BMC medical education*. 2016;16(1):82.
69. Levine M. Transforming experiences: nursing education and international immersion programs. *J Prof Nurs*. 2009;25(3):156-69. Epub 2009/05/20. doi: 10.1016/j.profnurs.2009.01.001. PubMed PMID: 19450787.
70. Townsend L, Gray J, Forber J. New ways of seeing: Nursing students' experiences of a pilot service learning program in Australia. *Nurse education in practice*. 2016;16(1):60-5.
71. Mee S. You're not to dance with the girls: Oral history, changing perception and practice. *Journal of intellectual disabilities*. 2010;14(1):33-42.
72. Roberta Hunt PhD R. Service-learning: An eye-opening experience that provokes emotion and challenges stereotypes. *Journal of Nursing Education*. 2007;46(6):277.

73. Henoch I, Melin-Johansson C, Bergh I, Strang S, Ek K, Hammarlund K, et al. Undergraduate nursing students' attitudes and preparedness toward caring for dying persons—A longitudinal study. *Nurse education in practice*. 2017;26:12-20.
74. McAllister M, Venturato L, Johnston A, Rowe J, Tower M, Moyle W. Solution focused teaching: a transformative approach to teaching nursing. *International Journal of Nursing Education Scholarship*. 2006;3(1).
75. Springfield EC, Smiler AP, Gwozdek AE. Measuring Curricular Impact on Dental Hygiene Students' Transformative Learning. *Journal of dental education*. 2015;79(12):1418-28.
76. Wihlborg M, Friberg EE, Rose KM, Eastham L. Facilitating learning through an international virtual collaborative practice: A case study. *Nurse education today*. 2018;61:3-8.
77. Levett-Jones T, Bowen L, Morris A. Enhancing nursing students' understanding of threshold concepts through the use of digital stories and a virtual community called 'Wiimali'. *Nurse Educ Pract*. 2015;15(2):91-6. Epub 2014/12/10. doi: 10.1016/j.nepr.2014.11.014. PubMed PMID: 25487056.
78. McAllister M, Levett-Jones T, Petrini MA, Lasater K. The viewing room: A lens for developing ethical comportment. *Nurse education in practice*. 2016;16(1):119-24.
79. Kaufman DM, Mann KV. Teaching and learning in medical education: how theory can inform practice. *Understanding medical education: Evidence, theory and practice*. 2010:7-29.
80. Mpeli MR, Botma Y. Abortion-related services: Value clarification through 'Difficult Dialogues' strategies. *Education, Citizenship and Social Justice*. 2015;10(3):278-88.
81. Nemec PB. Transformative learning. *Psychiatric rehabilitation journal*. 2012;35(6):478.
82. Zanchetta MS, Bailey A, Kolisnyk O, Baku L, Schwind J, Osino E, et al. Mentors' and mentees' intellectual-partnership through the lens of the Transformative Learning Theory. *Nurse education in practice*. 2017;25:111-20.
83. Rankin J, Brown V. Creative teaching method as a learning strategy for student midwives: A qualitative study. *Nurse education today*. 2016;38:93-100.
84. Bass J, Fenwick J, Sidebotham M. Development of a model of holistic reflection to facilitate transformative learning in student midwives. *Women and Birth*. 2017;30(3):227-35.
85. Smith-Stoner M, Hand MW. A criminal trial simulation: Pathway to transformative learning. *Nurse educator*. 2008;33(3):118-21.
86. Lane SH, Huffman C, Brackney DE, Cuddy A, editors. *Going Domestic: Importing the Study Abroad Experience. The Development of a Multicultural New York City Study Away Program*. Nursing forum; 2017: Wiley Online Library.
87. Hawala-Drury S, Hill MH. Interdisciplinary: Cultural competency and culturally congruent education for millennials in health professions. *Nurse education today*. 2012;32(7):772-8.
88. Asenso BA, Reimer-Kirkham S, Astle B. In real time: Exploring nursing students' learning during an international experience. *International journal of nursing education scholarship*. 2013;10(1):227-36.
89. Hsu LL. Conducting clinical post- conference in clinical teaching: a qualitative study. *Journal of Clinical Nursing*. 2007;16(8):1525-33.
90. Tashiro J, Shimpuku Y, Naruse K, Matsutani M. Concept analysis of reflection in nursing professional development. *Japan Journal of Nursing Science*. 2013;10(2):170-9.
91. Springfield E, Gwozdek A, Smiler AP. Transformation Rubric for Engaged Learning: A Tool and Method for Measuring Life-Changing Experiences. *International Journal of ePortfolio*. 2015;5(1):63-74.
92. Lane SH, Huffman C, Brackney DE, Cuddy A. *Going Domestic: Importing the Study Abroad Experience. The Development of a Multicultural New York City Study Away Program*. *Nursing Forum*. 2017;52(3):196-206. doi: 10.1111/nuf.12189. PubMed PMID: 124562665. Language: English. Entry Date: 20170816. Revision Date: 20170816. Publication Type: Article.

93. Edirippulige S, Marasinghe R. Applicability of Transformative Learning Theory in E-Health Teaching. *Transformative Learning and Online Education: Aesthetics, Dimensions and Concepts: Aesthetics, Dimensions and Concepts*. 2010:374.
94. Briscoe L. Becoming culturally sensitive: A painful process? *Midwifery*. 2013;29(6):559-65.
95. Stacey G, Oxley R, Aubeeluck A. Combining lived experience with the facilitation of enquiry- based learning: a ‘trigger’ for transformative learning. *Journal of psychiatric and mental health nursing*. 2015;22(7):522-8.
96. Meyer J, Land R. *Overcoming barriers to student understanding: Threshold concepts and troublesome knowledge*: Routledge; 2006.
97. Knaak S, Karpa J, Robinson R, Bradley L, editors. “They are Us—We are Them” Transformative learning through nursing education leadership. *Healthcare management forum*; 2016: SAGE Publications Sage CA: Los Angeles, CA.
98. Lonie JM, Desai KR. Using transformative learning theory to develop metacognitive and self-reflective skills in pharmacy students: a primer for pharmacy educators. *Currents in Pharmacy Teaching and Learning*. 2015;7(5):669-75.
99. Litzelman DK, Gardner A, Einterz RM, Owiti P, Wambui C, Huskins JC, et al. On Becoming a Global Citizen: Transformative Learning Through Global Health Experiences. *Annals of global health*. 2017;83(3-4):596-604.
100. Price P, Hooper B, Krishnagiri S, Taff SD, Bilics A. A way of seeing: How occupation is portrayed to students when taught as a concept beyond its use in therapy. *American Journal of Occupational Therapy*. 2017;71(4):1-9.
101. Mallory JL, Allen CL. Care of the dying: A positive nursing student experience. *Medsurg Nursing*. 2006;15(4):217.
102. Hooper B. Shortening the distance between the “I” and the “it”: A transformative approach to improving teaching. *Occupational therapy in health care*. 2007;21(1-2):199-215.
103. Blanchet Garneau A, Browne AJ, Varcoe C. Drawing on antiracist approaches toward a critical antidiscriminatory pedagogy for nursing. *Nursing inquiry*. 2018;25(1):e12211.
104. Bowsher G, Parry-Billings L, Georgeson A, Baraitser P. Ethical learning on international medical electives: a case-based analysis of medical student learning experiences. *BMC medical education*. 2018;18(1):78.
105. Margolis CZ, Rohrbaugh RM, Tsang L, Fleischer J, Graham MJ, Kellett A, et al. Student Reflection Papers on a Global Clinical Experience: A Qualitative Study. *Annals of global health*. 2017;83(2):333-8.
106. Cranton P, Taylor EW. Transformative learning theory: Seeking a more unified theory. *The handbook of transformative learning: Theory, research, and practice*. 2012:3-20.
107. Newman M. Calling transformative learning into question: Some mutinous thoughts. *Adult education quarterly*. 2012;62(1):36-55.
108. Hoggan CD. Transformative learning as a metatheory: Definition, criteria, and typology. *Adult education quarterly*. 2016;66(1):57-75.
109. Greenhill J, Richards JN, Mahoney S, Campbell N, Walters L. Transformative learning in medical education: context matters, a south Australian longitudinal study. *Journal of Transformative Education*. 2018;16(1):58-75.
110. de Villiers M, van Schalkwyk S, Blitz J, Couper I, Moodley K, Talib Z, et al. Decentralised training for medical students: a scoping review. *BMC Med Educ*. 2017;17(1):196. Epub 2017/11/11. doi: 10.1186/s12909-017-1050-9. PubMed PMID: 29121923; PubMed Central PMCID: PMC5680751.
111. Illeris K. Transformative learning and identity. *Journal of Transformative Education*. 2014;12(2):148-63.
112. Peluso MJ, van Schalkwyk S, Kellett A, Brewer TF, Clarfield AM, Davies D, et al. Reframing undergraduate medical education in global health: rationale and key principles from the Bellagio Global Health Education Initiative. *Medical teacher*. 2017;39(6):639-45.

113. Barnett R. Learning for an unknown future. Higher education Research & development. 2004;23(3):247-60.

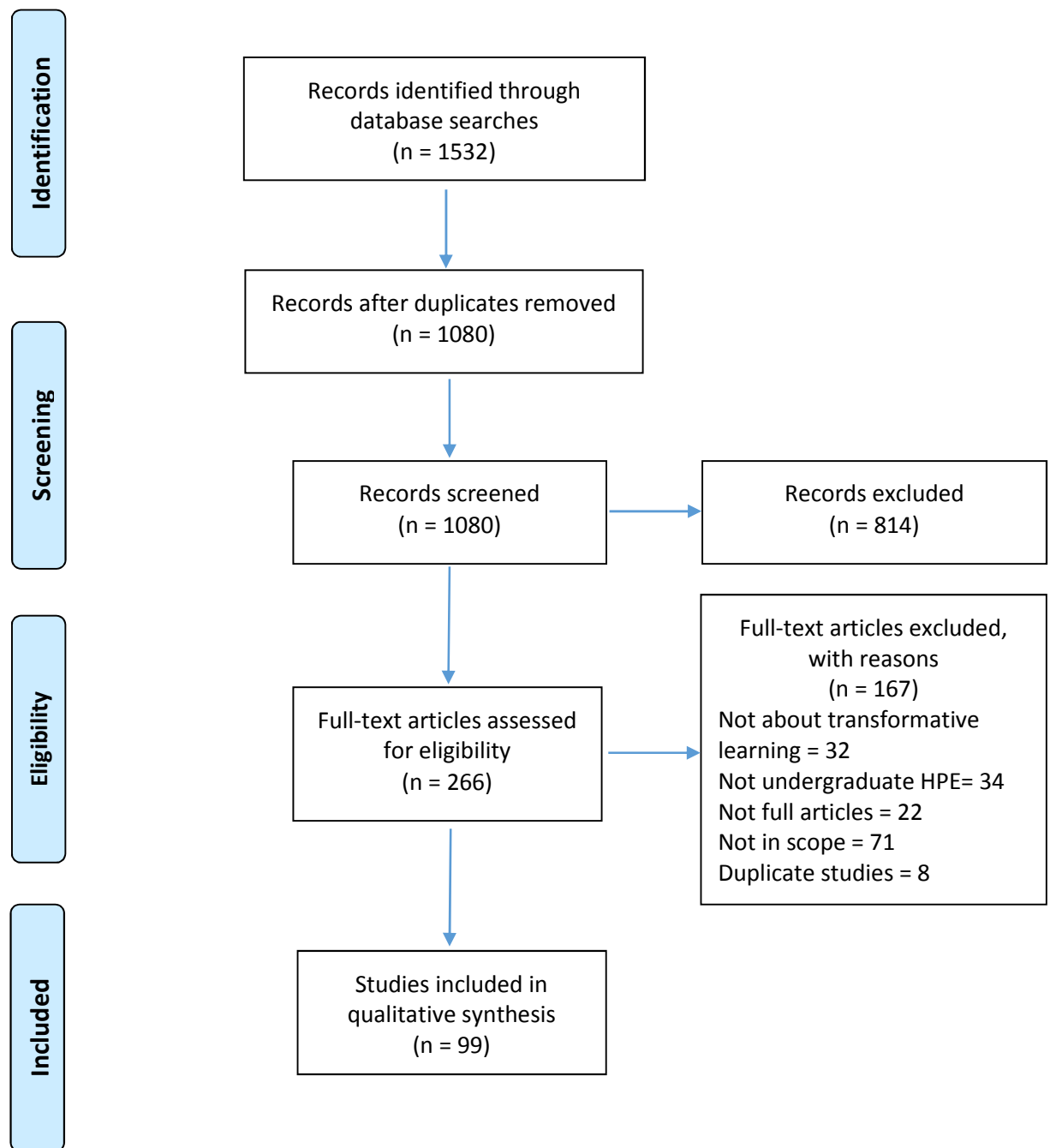


Figure 1: PRISMA Flow Diagram

	Concept A	Concept B	Concept C
Medical Subject Headings (MeSH)	exp Education, Medical, Undergraduate/ exp Education, Nursing/ exp Education, Dental/ exp Education, Pharmacy/ exp Education, Veterinary/ exp Education, Professional/	students, health occupations/ students, dental/ students, medical/ students, nursing/ students, pharmacy/ students, premedical/ students, public health/	exp Learning/
Textwords	health* profession* educat*.mp.	((medic* or nurs* or physician assistant* or allied health or dent* or pharmac* or veterinar*) adj2 (student* or trainee*)).mp.	(transform* adj2 learn*).mp. (transformative or transform or transforms or transforming).tw.